

GMD 5 Model Technical Advisory Committee Minutes

April 7th, 2009

Attendees: USFWS: Megan Estep and Rachel Laubhan; GMD#5: Sharon Falk; Balleau Groundwater, Inc.: Peter Balleau, Dave Romero, and Steve Silver; KWO: Diane Coe; SSPA: Steve Larson; KGS: Gaisheng Liu, Don Whittemore, and Wei Jin; KDA-DWR: Jeff Lanterman, Tina Alder, Darci Paull, Lisa Allen, Sam Perkins, Chris Beightel, and Andrew Lyon.

The pdf file of the presentation used during this meeting and associated model files can be found at <http://72.32.148.161>, log in with the user name “gmd5model”, and the password “Partners”.

The meeting began with remarks by Peter about how the model is running, and only a few more capabilities are yet to be added before the majority of calibration can begin. He also talked about how the recent work has focused on getting data that had been collected into the proper structure required for model files.

Steve Silver then took over and began to talk about the area of interest and the overlap area with the GMD#3 Model domain. Model examination and calibration for the area of interest is currently ongoing. The historical period of 1940 to 2008 is currently being used in the transient simulations.

Recharge distribution was shown on a map and discussed. This process is generally the same as the process used in the Middle Arkansas and the GMD#3 Models, which is to develop recharge curves. The map represented a 68 year average (1940 to 2008) to show the monthly recharge curves. Steve talked about the two curves that exist, one for infiltration recharge and one for runoff recharge.

Steve Larson brought up the issue of abnormally large recharge years that the curves cannot simulate that had occurred in the NWKS Model and the Middle Arkansas Model. The issue was addressed previously by using a scaling factor to introduce the correct amount of water in these years. This is kind of a two headed issue in the model, as not enough water is being introduced in the large recharge years, and too much water is being introduced in other dry years. Steve Silver and Dave Romero agreed that this phenomenon was more than likely occurring and would require further work to refine the curves, and when necessary, to use some kind of scaling factor to increase the amount of recharge.

Cells where evapotranspiration can take place were shown as an average of ET from 1940 to 2008.

A map of water transmission between unconsolidated sediments and underling bedrock was shown and discussed. Steve Silver talked about how there are areas, especially in the Pawnee-Buckner, where water is moving down to the bedrock and the bedrock is supplying water to the stream network. There is some well data that is between the unconsolidated sediments and the bedrock that BGW has and is still being worked on and will be incorporated into the model.

A map of starting heads and saturated thickness was shown with the current boundary conditions of constant head boundaries. Many of these constant head boundaries will be converted to general head boundaries or specified head boundaries in the near future, as this should help the model calculated water levels in areas near the boundaries.

Hydrographs of observed versus simulated water levels and maps that spatially show the residuals were shown and discussed. There are a few areas, such as the Pawnee-Buckner and the Southeast corner of the model, where there is a spatial trend in residuals occurring that will need to be addressed.

Steve Larson talked about a technique that SSPA has used to look at feet of drawdown as opposed to absolute water level elevations when trying to identify and evaluate the amount of water level decline and storage depletion. This helps resolve some of the issue of scale when using horizontal and vertical distances when evaluating water levels.

Hydrographs of stream flow at selected gaging stations throughout the model domain were shown. Most hydrographs were not simulating enough baseflow, and after some discussion, it was stated that this could also be an issue caused by not enough recharge being introduced into the model in very wet years. Streambed conductance will also need to be evaluated and calibrated.

Some of the next steps to be taken in model development were discussed. They were:

1. Improve model boundaries
2. Look at the Anisotropy between geologic units
3. Pumping refinement with LANDSAT imagery
4. Zoning of hydraulic conductivities
5. Draft model documentation and provide model files for review

During the second week of May, BGW will post the core model files for review. The next TAC meeting will be scheduled approximately one month following the transmission of this data, likely in June. BGW stated that they hope there will be robust review and feedback at the next TAC.

Action Items:

1. SSPA will transmit information to BGW on the scaling factor to address recharge in very wet and dry years, and about the technique they use to evaluate drawdown.
2. BWG will post all core model files on the ftp site during the week of May 11 – 15 for review.